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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/690,965

10/29/2003

Takashi Iwanami

81868.0107

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11/01/2006

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EXAMINER

NGUYEN, SANG H

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/690,965

Applicant(s)

IWANAMI ET AL.

Examiner

Sang Nguyen

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 13-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 13-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Applicant's response to amendment filed on 08/24/06 has been entered. It is noted that the application claims 1-10 and 13-17 and claim 11-12 and 18 –20 by the amendment 08/24/06.

Allowable Subject Matter

The indicated allowability of claims 1-10 and 13-17 are withdrawn in view of the newly discovered reference(s) to Earl et al (US 6,456,383). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Earl et al (U.S. Patent No. 6,456,383).

Regarding claim 1; Earl et al discloses an optical characteristic measurement device comprising:

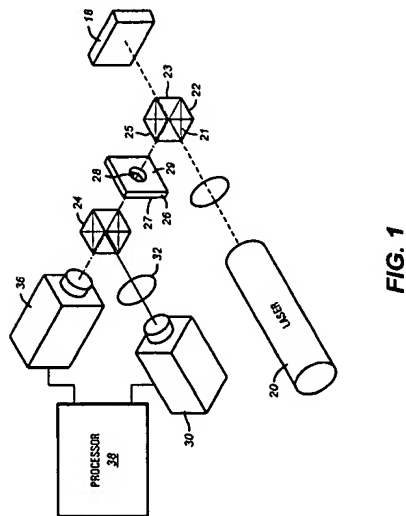
an optical path separation element (i.e., a beamsplitter [21 of figure 1]) to which a parallel laser beam is made incident through an aperture (28 of figure 1);

a first face-type photo-detector (i.e., a transmission detector [36 of figure 1]) that receives the laser beam transmitted through the optical path separation element (21 of figure 1); and

a second face-type photo-detector (i.e., a reflection detector [30 of figure 1]) that receives the laser beam reflected by the optical path separation element (21 of figure 1),

wherein a length of an optical path (figure 1) from the aperture (28 of figure 1) to the first face-type photo-detector (36 of figure 1) is set to be different from a length of an optical path (figure 1) from the aperture (8 of figure 1) to the second face-type photo-detector (30 of figure 1), and an incident angle of the laser beam (figure 10) and a position of a center of gravity of a distribution (figures 1 and 10) of a light quantity of the laser beam at the aperture (figures 1 and 10) are measured based on a distance from a reference position to a light receiving center position on the first face-type photo-detector, a distance from a reference position to a light receiving center position on the second face-type photo-detector (figures 7-8 and 11), the length of the optical path (figure 1) from the aperture (28 of figure 1) to the first face-type photo-detector (36 of figure 1), and the length of the optical path (figure 1) from the aperture (28 of figure 1) to the second face-type photo-detector (30 of figure 1 and col.2 line 25 to col.3 line 62).

See figures 1-11



Regarding claim 2; Earl et al discloses further comprising an interferometer (col.1 lines 35-42) that detects the laser beam which enters the optical path separation element.

Regarding claims 3-5; Earl et al discloses both the first face-type photo-detector and the second face-type photo-detector (30, 36 of figure 1) are a position sensing element of a photoelectric conversion type and/or the other is an image pick-up device (i.e., a charge coupled device detector and col.3 lines 54-57).

Claim Rejections - 35 USC § 103

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Earl et al (U.S. Patent No. 6,456,383) in view of Shigeta (JP 04 083 142).

Regarding claim 6; Earl et al discloses further comprising: an optical path synthesis element (24 of figure 1 between first detector [36 of figure 1] and second detector [36 of figure 1]) arranged either at a position on the optical path from the optical path separation element (21 of figure 1) to the first face-type photo-detector (36 of figure 1) or at a position on the optical path from the optical path separation element (21 of figure 1) to the second face-type photo-detector (30 of figure 1); a light source (20 of figure 1) that emits a parallel light to the optical path separation element (231 of figure 1) through the optical path synthesis element (24 of figure 1), and a reflection face (18 of figure 1) that reflects the parallel light from the optical path separation element (21 of figure 1) to the optical path separation element (24 of figure 1) to make the first face-type photo-detector (36 of figure 1) and the second face-type photo-detector (30 of figure 1) receive its return light. Earl et al discloses all of features of claimed invention except for the correction light source. However, Shigeta teaches that it is known in the art to provide the correction light source for emitting a correction parallel light (abstract and figures 1-8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the optical measuring device of Earl et al with the correction light source for emitting a correction

parallel light as taught by Shigeta for the purpose of improving the corrected light emitting from the light source to the object.

Regarding claim 7; Earl et al discloses further comprising an interferometer (col.1 lines 35-42) that detects the laser beam which enters the optical path separation element.

Regarding claims 8-10; Earl et al discloses both the first face-type photo-detector and the second face-type photo-detector (30, 36 of figure 1) are a position sensing element of a photoelectric conversion type and/or the other is an image pick-up device (i.e., a charge coupled device detector and col.3 lines 54-57).

Claims 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Earl et al (U.S. Patent No. 6,456, 383) in view of Lu (U.S. Patent No. 5,929,983).

Regarding claim 13; Earl et al discloses an optical characteristic measurement device comprising:

an optical path separation element (21 of figure 1) to which a parallel laser beam is made incident through an aperture (28 of figure 1);

a first face-type photo-detector (36 of figure 1) that receives the laser beam which is transmitted through or reflected by the optical path separation element (21 of figure 1);

a second face-type photo-detector (30 of figure 1) that receives the laser beam which is reflected by or transmitted through the optical path separation element (21 of figure 1); and

a lens (32 of figure 1) arranged on an optical path from the optical path separation element to the second face-type photo-detector (30 of figure 1), wherein the second face-type photo-detector (30 of figure 1) is arranged near a lens (32 of figure 1), and

wherein an incident angle of the parallel light beam (figure 10) to the optical path separation element (21 of figure 1) is measured based on a distance (figures 1, 7-8 and 11) from a reference position to a light receiving center position (figure 1) on the second face-type photo-detector (30 of figure 1) and a length of an optical path (figure 1) from the lens (32 of figure 1) to the second face-type photo-detector (30 of figure 1), and a position of a center of gravity of distribution of a light quantity at the aperture (28 of figure 1) is measured based on the incident angle (figure 10), the distance (figures 1, 7-8, and 11) from the reference position to the light receiving center position on the first face-type photo-detector (36 of figure 1), and the length of the optical paths (figure 1) from the aperture (28 of figure 1) to the first face-type photo-detector (36 of figure 1). See figures 1-11.

Earl et al discloses all of features of claimed invention except for a converging lens arranged on the optical path. However, Lu teaches that it is known in the art to provide a converging lens (42 of figure 5) arranged on the optical path (col.4 lines 26-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the optical measuring device of Earl et al with a converging lens arranged on the optical path as taught by Lu for the purpose of determining the height and/or tilt of local features on the surface of a sample.

Regarding claim 14; Earl et al discloses further comprising an interferometer (col.1 lines 35-42) that detects the laser beam which enters the optical path separation element.

Regarding claims 15-17; Earl et al discloses both the first face-type photo-detector and the second face-type photo-detector (30, 36 of figure 1) are a position sensing element of a photoelectric conversion type and/or the other is an image pick-up device (i.e., a charge coupled device detector and col.3 lines 54-57).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Nguyen whose telephone number is (571) 272-2425. The examiner can normally be reached on 9:30 am to 7:00 pm.

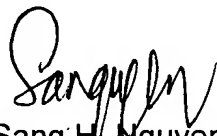
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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October 28, 2006


Sang H. Nguyen
Patent Examiner
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